

Amendments to the Claims

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

Claims 1-114. (Cancelled)

115. (Currently Amended) An apparatus for analysis of a sample on a solid phase surface, comprising:

a light source ~~angled such that light is delivered~~ oriented to deliver light to a said sample on a solid phase surface without the light first passing through said solid phase surface when said solid phase surface is present in said apparatus; ~~;~~ and

a scattered light detector located such that said detector is on ~~the~~ a same side of said solid phase surface as said light source when said solid phase surface is present in said apparatus,

wherein said apparatus is configured such that light scattering particles associated with said sample ~~can be~~ are illuminated by said light under conditions ~~which~~ that produce scattered light from said particles and said scattered light ~~can be detected~~ is detectable by a human eye with less than 500 times magnification and without electronic amplification.

116. (Currently Amended) The apparatus of claim 115, wherein a sample device comprises said solid phase surface and said detector is substantially ~~essentially~~ perpendicular to said solid phase surface when said sample device is present in said apparatus.

117. (Currently Amended) The apparatus of claim 115, ~~wherein said apparatus is configured to accept a sample bearing device selected from a slide and an array chip~~ further comprising a sample device holder for positioning a sample device within said apparatus, wherein ~~said slide or array chip~~ the sample device comprises said solid phase surface.

118. (Currently Amended) The apparatus of claim ~~115~~ 117, further comprising a said sample device.

119. (Previously Presented) The apparatus of claim 118, wherein said sample device is selected from the group consisting of an array slide, an array chip, and an array plate.

120. (Previously Presented) The apparatus of claim 118, wherein said sample device is a microtiter plate or other well-containing device.

121. (Currently Amended) The apparatus of claim 119, wherein a high refractive index medium is introduced at said solid phase surface, ~~surface is covered by a medium~~ thereby increasing the refractive index of the medium surrounding said light scattering particles.

122. (Previously Presented) The apparatus of claim 117, further comprising a light guide for the illuminating light.

123. (Previously Presented) The apparatus of claim 122, wherein said light guide is a prism, optical fiber, or optical fiber bundle.

124. (Currently Amended) The apparatus of claim 115, further comprising one or more lenses through which illuminating light passes, for collecting or focusing or both collecting and focusing said illuminating light.

125. (Previously Presented) The apparatus of claim 115, further comprising a collection lens to collect said scattered light for directing to said scattered light detector.

126. (Previously Presented) The apparatus of claim 115, further comprising one or more lenses to provide a focused image of said sample.

127. (Currently Amended) The apparatus of claim 115, further comprising at least one optical filter, arranged such that illuminating light, or scattered light, or both ~~will pass~~ pass through at least one said optical filter.

128. (Previously Presented) The apparatus of claim 127, wherein said optical filter is selected from the group consisting of a narrow band pass filter, a cutoff filter, and a polarizer.

129. (Previously Presented) The apparatus of claim 115, further comprising an electronic detector for detecting scattered light.

130. (Previously Presented) The apparatus of claim 129, further comprising an image processor that discriminates light scattering signals based on color or intensity or both.

131. (Previously Presented) The apparatus of claim 115, wherein said light source is selected from the group consisting of light emitting diode (LED), laser diode, discharge lamp, and filament lamp.

132. (Currently Amended) The apparatus of claim 115, further comprising a particle counter, said counter comprising ~~having necessary~~ computer software or firmware that is configured to detect said scattered light and count the number of said light scattering particles in a selected area.

133. (Currently Amended) The apparatus of claim 115, further comprising an integrated light intensity detector, said integrated light intensity detector comprising ~~having necessary~~ computer software or firmware configured to detect said scattered light.

134. (Currently Amended) The apparatus of claim 115, further comprising an integrated light intensity detector and a particle counter, ~~including necessary~~ comprising computer software or firmware configured to detect said scattered light.

135. (Previously Presented) The apparatus of claim 115, further comprising a photodetector selected from the group consisting of a still camera, a video camera, and a CCD device, configured to detect said scattered light.

136. (Currently Amended) The apparatus of claim 115, wherein said apparatus is configured ~~to allow~~ for conducting an assay of a microarray.

137. (Previously Presented) The apparatus of claim 136, wherein each separate area of said microarray has a dimension between ten square microns and one square millimeter.

138. (Previously Presented) The apparatus of claim 136, wherein each separate area of said microarray has a dimension greater than one square millimeter.
139. (Previously Presented) The apparatus of claim 137, wherein said apparatus detects the number of particles in each of said separate areas.
140. (Previously Presented) The apparatus of claim 138, wherein said apparatus detects the number of particles in each of said separate areas.
141. (Previously Presented) The apparatus of claim 137, wherein said apparatus is configured to detect the light intensity in each of said separate areas.
142. (Previously Presented) The apparatus of claim 138, wherein said apparatus is configured to detect the light intensity in each of said separate areas.
143. (Currently Amended) The apparatus of claim 115, wherein said apparatus is configured to detect and distinguish ~~light scattered from a plurality of different particle types~~ particles by a characteristic of the light scattered by the particles.
144. (Currently Amended) The apparatus of claim 143, wherein said apparatus distinguishes different particles by color of the scattered light.
145. (Currently Amended) The apparatus of claim 143, wherein said apparatus distinguishes different particles by intensity of the scattered light.
146. (Currently Amended) The apparatus of claim 143, wherein said apparatus distinguishes different particles by peak light scattering wavelength of the scattered light.
147. (Previously Presented) The apparatus of claim 144, wherein said apparatus comprises a plurality of different bandpass filters to provide separate detection of light scattered from different particle types.
148. (New) An apparatus for light scattering particle label analysis, comprising:
a sample device holder adapted to hold a sample device bearing a sample for analysis;

a light source oriented to illuminate the sample with non-evanescent wave light when the sample device is present in the sample device holder; and

a scattered light detector cooperating with said sample device holder and said illumination system to detect light scattered from particles in the sample, wherein

wherein the light scattered from the particles in the sample is detectable by a human eye with less than 500 times magnification and without electronic amplification.

149. (New) The apparatus of claim 148, wherein, when the sample device is present in said sample device holder, said light source and said detector are positioned on a same side of the sample device.

150. (New) The apparatus of claim 149, wherein, when the sample device is present in said sample device holder, light from said light source illuminates said sample without first passing through the sample device.

151. (New) The apparatus of claim 150, wherein, when the sample device is present in said sample device holder, light from said light source illuminates said sample after passing through the sample device.

152. (New) The apparatus of claim 148, wherein, when the sample device is present in said sample device holder, said light source and said scattered light detector are positioned on opposite sides of the sample device.

153. (New) The apparatus of claim 148, wherein the sample device is selected from the group consisting of chips, slides, microtiter plates, test tubes, capillary tubes, flow cells, microchannel devices, cuvettes, dipsticks, and containers for holding liquid or solid phase samples.

154. (New) The apparatus of claim 153, wherein the sample device comprises a solid-phase surface for bearing the sample for analysis.

155. (New) The apparatus of claim 148, wherein said detector comprises collection optics for collecting and magnifying the scattered light.

156. (New) The apparatus of claim 155, wherein said collection optics produce a scattered light image viewable by a human eye.

157. (New) The apparatus of claim 155, wherein said detector further comprises a photodetector selected from the group consisting of a monochrome camera, a color camera, a still camera, a video camera, a charge-coupled device, and a charge-injection device.

158. (New) The apparatus of claim 148, wherein said detector comprises a photodetector selected from the group consisting of a monochrome camera, a color camera, a still camera, a video camera, a charge-coupled device, and a charge-injection device.

159. (New) The apparatus of claim 148, further comprising the sample device.

160. (New) The apparatus of claim 159, wherein a high refractive index medium is disposed on said sample device, thereby increasing the refractive index of the medium surrounding said light scattering particles.

161. (New) The apparatus of claim 160, wherein said detector is oriented to detect light scattered substantially perpendicular to the sample device.